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Owing to the high cost of production, the Executive Council of the Entomological Society of Ontario has decided that author's separates can no longer be supplied free of charge, and, if desired, must be paid for at the current rates.

It will further be necessary to ask authors to bear the entire cost of reproduction of all illustrations used in their articles, this to include the cost of coated paper inserts where such are required.

It is realized that the above course is bound to work a certain amount of hardship on authors and reduce materially the value of many articles. Since, however, the only alternative—if the Canadian Entomologist is to continue as a publication—would be a considerable increase in the subscription price or a reduction in the size of the journal, it is felt that entomologists generally will favor the above procedure.

POPULAR AND PRACTICAL ENTOMOLOGY.

THE APPLE LEAF-CRUMPLER AS A PEST OF COTONEASTER.

BY HARRY B. WEISS,
New Brunswick, N. J.

For the past several years this widely distributed species *Mineola indiginella* Zell.[1] which normally feeds on apple, quince, plum, cherry, peach and pear and which is rarely troublesome in well-kept orchards, has been noted as attacking various species of *Cotoneaster,* notably *microphylla* and *horizontalis* in a nursery at Rutherford, N.J. The Cotoneasters are ornamental shrubs, many of them having decorative fruits which remain usually through the entire winter. Some are adapted for rockeries on account of their low spreading or prostrate habit. They belong to the *Roseaceae* along with the apple, peach, etc.

The habits of the insect on Cotoneaster are practically identical with those noted on apple. The partly grown reddish brown caterpillars hibernate in a dark colored, elongate, crooked or twisted tube which is sometimes horn-like or cornucopia shaped. These tubes, which are about an inch in length, wide at one end and tapering to a point, are fastened securely to a twig for their entire lengths and are closed at both ends. Sometimes a tube will partly encircle a twig. Many tubes will be found where the branches fork. Each is lined inside with silk and covered outside with particles of leaves, etc.

In the spring the larvæ open the large ends of their cases and web up the foliage somewhat in the vicinity of the cases, later feeding on the leaves, flower buds, etc. Many of them feed on the green bark at the mouths of the cases and sometimes girdle the twigs. This twig eating habit was noted for the first time by Saunders[2] in connection with injury to fruit trees. As the larva grows

1. Identified by Mr. Carl Heinrich.

it enlarges its case by building additions to the wide end which is always open. The larva becomes full grown about the first or second week of June, loosely closes the opening of its tube with particles of leaves and silk and transforms to a reddish-brown pupa, which stage lasts about two weeks after which the moth appears. There is only one brood annually and eggs deposited during July result in overwintering larva. Most of the larval feeding appears to take place during the night, the larvæ remaining in their tubes during the daytime.

The adult was described by Zeller in 1848 under the name *Myelois indiginella*, the habitat being given as North America. The first reference to it in American literature appeared in 1851 in the Prairie Farmer. After this date later notices appeared in the Prairie Farmer and other publications. In 1889 Forbes[3] gave an account of the species and a good review of the literature up to that time. Stedman[4] and Slingerland and Crosby[5] state that in the spring, the larvæ cut the fastenings of their winter cases and travel with the cases to the opening buds on which they feed. Saunders[6] states that when the caterpillars become active in the spring they leave the cases and draw the opening leaves near so that their meals can be enjoyed in safety. He mentions nothing about the case being carried about. On Cotoneaster the overwintering cases or tubes are securely fastened to the twigs for their entire lengths and in the spring the larva feeds on the foliage and twig bark in the immediate neighborhood of the case. Many specimens were examined but not one was observed carrying its case around. It was noted that larvæ which were removed from their cases and placed on foliage away from their homes, constructed new cases in the course of a day or so.

As only a brief description of the larva was given by Forbes[7], the following is included:—

Full grown larva. Length about 13 mm. Width about 2 mm. Brown or greenish, subcylindrical, tapering slightly posteriorly. Head and cervical shield dark reddish-brown. Head broad, almost as wide as thorax, strongly shagreened, thoracic shield somewhat less so. Ocelli lateral, six in each group, five arranged in a semicircle and one below close to the antenna. Antenna three jointed, penultimate joint dark brown, ultimate joint minute. Thoracic shield occupying the greater part of the dorsal surface of the prothorax and bisected by a pale brown median line, at the end of the shield on each side is a dark brown, irregular area separated from the shield by a light brown line and extending almost the length of the shield; posterior to this area is a dark oval area enclosing the spiracle. Dorsal surfaces of thoracic segments two and three transversely wrinkled, the former bearing an irregular oval dark spot on either side of the middle, each spot containing a small spot from which arises a long white hair. Abdominal segments faintly transversely wrinkled. Dorsal plate of last segment slightly darker than body. Legs and prolegs of moderate size, legs reddish brown, sparsely hairy, hairs comparatively short and white. Head bearing several long,

2. Can. Ent. July, 1870, vol. II, pp. 126-128.
3. Fourth Rept. State Ent. Ill., pp. 65-74, 1889.
4. Mo. Agric. Exp. Sta. Bul. 36, pp. 73-80, 1896.
5. Manual Fruit Insects, p. 68, 1914.
6. Insects Injurious to Fruits, pp. 93-95, 1904.
7. Loc. cit.

fine hairs, each body segment bears comparatively long, fine hairs arranged more or less transversely, one row on each thoracic segment and two rows on each abdominal segment. All hairs arising from dark tuberculate bases.

The younger larva are more uniformly dark reddish brown and the body tapers more strongly from the second thoracic segment which gives the head and first segment an unusually wide appearance. At Rutherford, N. J., the larva was parasitized to some extent by *Tachina phycitae* Le Baron. Considerable damage can be done to Cotoneaster by the apple leaf-crumpler, especially by reason of its twig feeding habit. Where several are present on a twig, it is soon girdled. Moreover the leaves are small and the branches soon stripped. Arsenicals applied early in the season as in the case of infested apple trees should prove effective.

A NEW ANISOTA SPECIES FROM MANITOBA (LEPID.)

BY J. MCDUNNOUGH, PH.D.*
Entomological Branch, Ottawa.

Anisota manitobensis sp. nov.

♂.—Head, thorax, legs and abdomen a deep orange-brown; primaries somewhat deeper in color than thorax, prominently suffused in basal and terminal areas and at times along inner margin with purplish; the usual round, white discocellular spot; an oblique smoky line from apex of wing to inner margin 2/3 from base; secondaries less triangular than in *senatoria* and much less produced than in *virginiensis*, similar in color to primaries; terminal area suffused with purplish and defined inwardly by an oblique, rather broad, smoky line. Beneath much as above, rather bright in color. Expanse, 31-48 mm.

♀.—Wings paler than in ♂ sex with less purplish suffusion and with smoky subterminal lines broader, less sharply defined and shaded with purple. Expanse, 55 mm.

Holotype.—1 ♂, Aweme, Man. (July 4th, N. Criddle) in Canadian National Collection.

Allotype.—1 ♀, Aweme, Man. (June 23rd, N. Criddle) in same Collection.

Paratypes.—2 ♂'s, Aweme, Man. (June 29th, July 4th, N. Criddle) in same Collection.

The species agrees with *stigma* Fabr. in the lack of any hyaline area on the primaries of the male; it differs, however, from this species in the entire lack of any brown sprinkling and the brighter coloration, approaching in this respect nearer to the females of *virginiensis* Dru. The males before me vary considerably in size. The species has also been captured, I believe, in the neighborhood of Winnipeg.

A CORRECTION.

On page 69, line 2, read "8 p.m." instead of "6 p.m."

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* Contribution from Entomological Branch, Department of Agr., Ottawa.

SYNOPSES OF SOME NORTH AMERICAN ANTHOMYIINAE (DIPTERA).

BY J. R. MALLOCH,
Urbana, Ill.

Herewith are presented synopses of genera of Anthomyiinae to faciliate the identification of some of the species which I have recently described in this subfamily.

Eremomyoides Malloch.

This genus is distinguished from its allies by having hairs on prosternum, propleura in centre, pteropleura, and hypopleura.

KEYS TO SPECIES.

MALES.

1. Eyes separated by more than twice the width across posterior ocelli; fore tibia with 1 posterior bristle; costal setulae distinctly longer than diameter of costal vein; hind tibia with one or two bristles on anterior surface; apex of second antennal segment on inner side transverse; fifth sternite with a number of erect setulose hairs on apical half of inner margin of each process, the basal half bare.....*setosa* Stein

   Eyes separated by less than twice the width across posterior ocelli; fore tibia normally with two posterior bristles.....2

2. Eyes separated by less than width across posterior ocelli; hind tibia reddish; costal setulae weak; second antennal segment almost transverse on inner side at apex; fifth sternite with very short hairs on entire length of inner sides of processes.....*cylindrica* Stein

   Eyes separated by at least as great a distance as width across posterior ocelli; hind tibia black.....3

3. Costal setulae weak, hardly distinguishable from the costal hairs; hind tibia without an anterior bristle; thorax with three pairs of presutural acrostichals; second antennal segment angulated at apex on inner side.....*fuscipes* Malloch

   Costal setulae strong, outstanding; hind tibia with an anterior bristle; thorax with two pairs of presutural acrostichals; second antennal segment transverse at apex on inner side.....*similis* Malloch

FEMALES.

1. Fourth abdominal tergite obtusely rounded apically, curved over apex of abdomen and armed with long, dense bristles, appearing tufted .....*parkeri* Malloch

   Fourth abdominal tergite normal, not curved over apex of abdomen nor tufted, with a few bristles at apex.....2

3. Costal setulae weak, but little stronger than the costal hairs, and not longer than diameter of costal vein; mid tibia with an anteroventral and an anterodorsal bristle; apex of second antennal segment angulate at centre on inner side.....*fuscipes* Malloch

Costal setulae strong, longer than diameter of costal vein; mid tibia with an anterior bristle in addition to the other two; second antennal segment transverse at apex on inner side.....4

4. Hind tibia black; second segment of fore tarsus less than three times as long as its width at apex, third and fourth segments very much widened .....*similis* Malloch

Hind tibia rufous; second segment of fore tarsus at least four times as long as its width at apex, third and fourth segments but little widened .....*setosa* Stein

Anthomyia Meigen.

KEY TO SPECIES.

1. Deep black species, without conspicuous markings.....*aestiva* Meigen
Black species with dense pale gray pruinescence and deep black markings on thorax and abdomen.....*pluvialis* Linné

Egle Robineau-Desvoidy

Only one species, *mystacea* Coquillett, lacks the distinctive bristle on the anteroventral surface of the mid tibia in the male. The bristle referred to is found in both sexes. Meigen's species, *aestiva,* does not belong to this genus but to *Anthomyia,* the propleura being hairy. The species occurs in Newfoundland and Labrador.

KEY TO SPECIES.

1. Mid tibia without an anteroventral bristle; hind tibia with about 9 anterodorsal and 6 posterodorsal bristles, 3 of the latter short.....*mystacea* Coquillett
Mid tibia with an anteroventral bristle near middle.....2

2. Abdomen cylindrical, pale gray pruinescent, with a series of black dorsocentral spots; hind femur usually with 4 widely spaced anteroventral, bristles on apical half; hind tibia with 1 anteroventral, 2 anterodorsal and 2 posterodorsal bristles.....*cinerella* Fabricius

Abdomen depressed, black, slightly pruinescent on each side of median line on dorsum so that when seen from behind each segment has a black vitta which is connected with an anterior transverse band and usually also with one on posterior margin.....3

3. Hind tibia with from 13 to 15 closely placed setulae on anterodorsal surface .....*hirta* Malloch

Hind tibia with from 5 to 8 bristles of irregular lengths on anterodorsal surface.....*radicum* Linné

Of the four species here listed *radicum* and *cinerella* are of general distribution and common to Europe and North America. The other two occur in the Western States at high altitudes and *mystacea* also in the extreme northwest.

Hammomyia Rondani

Generic characters: Head more or less buccate, parafacial in profile at least as wide as third antennal segment; distance between vibrissae not greater than distance of either from nearest eye-margin; abdomen in both sexes cylindrical or subcylindrical; female genitalia usually with two or more strong curved apical spines; hind tibia with at least three antero-and posterodorsal bristles; wing-veins 3 and 4 convergent apically; frons of female always less than one-third of the head-width, with or without interfrontal bristles.

KEY TO SPECIES.

1. Legs entirely black, or only the knees reddish; arista with very short hairs, the longest not as long as its basal diameter.....2
   Legs with at least the tibiae entirely or in large part reddish; arista with its longest hairs longer than its basal diameter; prealar bristle absent....3

2. Prealar bristle absent; mid tibia without a ventral bristle beyond middle; abdomen with a series of dorsocentral brown spots and a brown spot at each anterior angle of each tergite.....*maculata* Stein
   Prealar bristle present; mid tibia in both sexes with one or two ventral bristles beyond middle; abdomen with a dorsocentral black vitta .....*paludis* Johannsen

3. Abdomen with a slightly interrupted central vitta and a large brown spot on lateral margin of each tergite; cross-veins of wings slightly infuscated, the outer one nearly vertical, its upper extremity very noticeably further from wing margin than its lower; female with a ventral bristle on mid tibia.....*johnsoni* Stein

   Abdomen with a complete dorsocentral vitta and a poorly defined area on anterior lateral angle of each tergite fuscous; cross-veins not infuscated, outer one oblique, its upper extremity not much further from wing margin than its lower.....*marylandica* Malloch

Pogonomyza Schnabl and Dzeidzki.

The species of this genus have the legs entirely black; proboscis very much thickened, as thick as or thicker than the fore femora; the hind tibia with more than two posterodorsal and anterodorsal bristles, and in male without a fringe of fine hairs and without a blunt posterior spine at apex of fore tibia.

All the species are northern in their distribution. One species, *flavipennis*, occurs commonly in Europe in the fall on flowers of knapweed, thistles, and ragweed, and is found in New England and eastern Canada. There are some North American species still undescribed. The larval habits are unknown to me.

KEY TO SPECIES.

1. Hairs of arista very long, much longer than width of third antennal segment; prealar bristle very short.....*flavipennis* Fallen
   Hairs of arista very short, not longer than its basal diameter.....2

2 Mid femur with a number of strong bristles on apical half of anteroventral surface and two very long strong ones on basal half of posteroventral, the femora slender.....*spinosissima* Malloch

Mid femur without bristles on apical half of anteroventral surface, the bristles on basal half of posteroventral surface very short; femora noticeably thickened.....*proboscidalis* Malloch

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NEW SPECIES AND LIFE HISTORIES IN PAPAIPEMA SM. (LEPIDOPTERA) NO. 20.

BY HENRY BIRD,
Rye, N. Y.

Papaipema insulidens Bird.

Although several occurrences of this species have been chronicled since its description in 1902, it remained for the fuller biological details to be detected by Mr. F. M. Jones, of Wilmington, Del., whose western trip in 1918 produced a number of interesting results. Mr. Jones' familiarity with the larval procedure in this genus made his observations particularly valuable, but excepting this one, he reported that no other symptom of *Papaipema* work came to his notice. On August 12th, while at Sisson, California, not far from the base of Mount Shasta, an unfamiliar plant attracted his attention, and an examination proved it to be bored by some larval form of this genus. Specimens of the plant and its contained insect were forwarded to the writer, the plant ultimately being determined by Dr. N. L. Britton, of New York, as *Senecio hydrophilus* Nutt. Of the ecological situation involved, Mr. Jones writes: "Larvae sent to you inhabited a tall, coarse herb, growing very locally, in an open and wet locality—almost out of the water. The flowers were bright yellow and conspicuous, the stems hollow and rather tender. The larva enters the stem and prepares an exit thinly ceiled by papery epidermis of the stem. to, or below the ground surface, throws out little, or no frass, pupates low in the stem and prepares an exit thinly ciled by papery epidermis of the stem. At the date found, all but two had pupated (except those killed by parasites), and one of these was about to do so."

Of the twelve pupae forwarded, nine produced adults, with three falling to the usual predatory forces that follow in the wake of *Papaipema*. This mortality is of the average, after pupal change, and in a way, helps to strengthen the assumption that these larvae were doubtless following their usual trend in a preferred and primitive foodplant. Dr. Britton informs us that this section of the large genus *Senecio* has a number of closely allied species, and there is a possibility *insulidens* may take up with others also. Originally described from Vancouver Island, its range is thus extended considerably southward, and it may be assumed to follow the main habitat of the *Senecio* species serving as foodplant.

The larva seems typical of the generic series; head has the usual oblique line at the ocelli which finds a continuation in a lateral border to the cephalic

shield. The tubercles are not strongly defined, the anal plate of usual prominence, brownish, not black. The alcoholic specimen received is discolored from bacterial disease apparently, and details are indistinct. The pupa is normal, glossy and thin-shelled, so that the stigmata, though not brightly white, may be seen before emergence. It is supported in the hollow stem on a cushion of chewed fragments, at a varying distance below the exit orifice. Emergence of adults, Aug. 26 to Sept. 2. Three moths of the series have the stigmata suppressed, in the line of this frequent variation in the genus.

Papaipema nebris Gn.

The economic features connected with the introduction of the European Corn Borer, *Pyrausta nubilalis* Hub., have drawn much attention to the larval habit of *nebris* when it occasionally damages corn; because of both species being borers, the public frequently assumes to have met the former, whereas it is generally the indigenous species which is concerned. While many of its congeners will, in the first stages, attack grasses, *nebris* seems to be the only one that takes up with, and completes its transformations in corn. These attacks are simply invasions, since the females of the preceding year could not anticipate the following year's location of corn, and it is noticeable also that it is always the borders of plantings which show damage. The entry of the larva is by descent into the head of the leaf whorl, and though the plant continues to grow, the embryonic flower head is destroyed and no ears ever mature.

The Ambrosiaceae were presumably primitively preferred foodplants with this species; some of these plants, particularly *Ambrosia trifida,* are apt to occur as weeds at the borders of cultivation, and due to such occurrence, when oviposition may have been numerous at such points, the unplaced larvae of the following season have to shift to whatever may avail them. The point that we wish to emphasize is that whereas *nebris* normally furnishes an astonishing panorama of parasitism, when working in the preferred Ambrosiaceae, when in corn our observations show an almost entire absence of parasitic attack. The same holds with regard to its accidental presence in any cultivated plant and indicates that it is much to the advantage of the species to make these occasional detours. So keen are its enemies—*Macicera senilis,* Mg., and *Microplitis gortynae* Riley, (det. A. B. Gahan), being of chief import in the East—in ferreting out their host that at times total extinction in limited locations result. The parasitized larvæ offer, in the case of *Microplitis* particularly, a fruitful field to a secondary following which is numerous in point of species, and efficient in its aid to the central host. There is thus a swinging pendulum of events, registering a rise as *nebris* gains an ascendency, which may be maintained for several years, then an abrupt fall when the primary foes have gained their advantage. From this we may gather that, with the adaptability of *nebris* to so many plants of cultivation, its adventitious establishment in suitable foreign conditions would doubtless bring it into prominence as a first-class pest.

An adult *Papaipema,* undertermined and so far unencountered as a larva, has stood in our series for many years. It was a capture at light and seems to represent an individuality that is not yet recorded. The following name is proposed for it:

Papaipema placida n. sp.

Head smooth on frons, antenna simple, ringed at base by white scales. The thoracic vestiture is normal in tuftings and density, dull yellowish intermixed with purple-brown; abdomen paler, lustrous luteous. Fore wing in outline rather more falcate below apex than usual; basal area defined in the dull yellow ground color, basal line double; median field evenly defined in dull yellow except above median vein inward from reinform, where a powdering of purple brown occurs; the orbicular and claviform show as three superimposed white spots, the middle one being a mere dot; the reniform is broken into dots by the veins, clustered about the central lunulate line, and all pure white except the middle outer one, which is yellow; the median shade line is prominently marked in brown from reniform to inner margin; post-medial line is double and bends outward with pronounced sweep past reniform; subterminal area dull purplish; terminal space scarcely differentiated in paler shade; the usual apical dash is of the ground colour. Hind wing much paler, of a luteous shade of the ground color of fore wing, with the veins, a discoidal spot, a median line and a subterminal band marked in brown powderings. On the under surface the wings are glistening luteous, a median line observable and brown powderings which are deepest at the costal margins.

Expanse 31 mm.

The male genitalic structure is of the conventional pattern of the genus. In minor degree, a narrowing of the valva immediately behind the costa is noteworthy in being more pronounced than with any other species. The usual curved, and sharp-pointed harpe has its outward edge finely toothed. The unique male type is with the writer and was taken at New Brighton, Pa., (F. A. Merrick), September 6, 1907. This single example is in good condition, and unless a dwarf, indicates a small species of a coloration similar to *duovata*, or to occasional specimens of *harrisii*. From the latter and from *astuta*, it differs in the greater curve of the post-medial line.

NOTES ON A COLLECTION OF LABRADOR LEPIDOPTERA.

BY J. MCDUNNOUGH, PH. D.*
Entomological Branch, Ottawa.

Through the kindness of Dr. E. M. Walker, of Toronto, a very interesting lot of Labrador Lepidoptera, collected in the vicinity of Hopedale, and a much smaller lot, taken at Nain, has passed through my hands for identification. Due to the long series of several species I have been enabled to clear up some doubtful points of synonymy and append herewith a list of the species collected with notes on certain of them. Where no definite locality is mentioned it is understood that the species were captured at Hopedale.

PIERIDAE.

Pieris napi frigida Scud.

I have already on two occasions discussed the status of this race (B. & McD., Contrib. III, 58, Pl. VII, figs. 1, 2; IV, 63). With a long series of

* Contribution from Entomological Branch, Department of Agr., Ottawa.

both sexes before me, captured July 7-18, it is evident that Scudder's diagnosis was based entirely on specimens of the female sex, and rather worn specimens at that. This accounts for his statement that the "secondaries of the male *frigida* are shaped as in the ♀ of *oleracea*" and that "the black scales above at the base of both wings are more profuse and widely spread." *Borealis* Grt. based on ♂ specimens will sink as a synonym.

The underside of secondaries varies in color from quite pale to strikingly bright yellow (especially marked in ♀'s) and in all cases the veins are very heavily outlined in black. On the upper side the ♂'s are pure white with the veins in the apical area marked with black; the ♀'s have at times a marked yellow tinge, are heavily sprinkled with smoky scales on primaries at base of wing and along inner margin and in well marked specimens show traces of the two subterminal spots; the veins are more suffused with black than in the ♂ sex. *Frigida* Scud. will represent the race from Labrador, Newfoundland and adjacent areas in Quebec with the partial summer generation *acadica* Edw. in Southern Newfoundland. The figures given in the "Contributions" (l. c. Pl. VII, figs. 1, 2) represent well-marked specimens of this race.

Eurymus pelidne labradorensis Scud.

The species was represented by a long series of rather indifferent specimens. I have treated of it in "Contributions III, 67, Pl. VII, figs. 6-8." Greenland and Iceland specimens must be examined before it can be determined whether the racial name is valid or should be sunk as a synonym.

Eurymus nastes Bdv.

Two specimens, Nain.

NYMPHALIDAE.

Brenthis aphirape triclaris Hbn.

Brenthis chariclea boisduvali Dup.

Both the above well-known Labrador forms were represented by good series.

Brenthis freija Thun.

A single worn specimen, taken July 26th.

Brenthis polaris Bdv.

One ♂ captured August 5th.

SATYRIDAE.

Oeneis jutta Hbn.

A worn ♂, captured on August 2nd at Hopedale; another ♂ from Nain.

Oeneis taygete Hbn.

Several good specimens of both sexes captured between July 25th and August 23rd.

Oeneis oeno Bdv.

A small series of both sexes was present.

My idea of this species was given in "Contributions IV, 68" and I still adhere to this opinion. Besides the Labrador specimens several from the north shore of the Gulf of St. Lawrence are before me, captured by C. H. Young at Rocky Bay; these cannot be separated from the Labrador specimens

in maculation but in the ♂ genitalia show slight divergences and are the exact counterpart of the figure of the genitalia of *katahdin* given in "Contributions Pl. XXX, fig. 1." Under these circumstances it would appear that *katahdin* should be considered as a geographical race of *oeno* and not as a good species. I give figures of the genitalia of the Labrador and Gulf Coast forms, the main point of distinction is found in the width of the valves at their distal end.

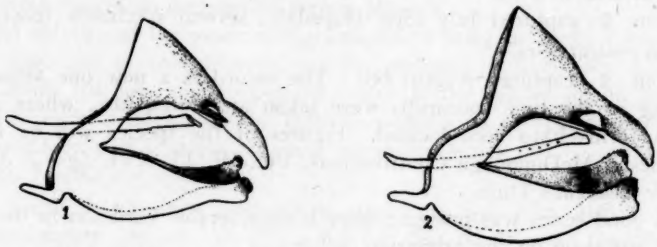

Fig. 1. Male Genitalia of *Oeneis oeno* Bdv. from Labrador.
Fig. 2. Male Genitalia of *Oeneis oeno* Bdv. from Rocky Bay.

LYCAENIDAE.

Plebeius scudderi Edw.

As far as I know this species has not been captured in Labrador since it was recorded by Moeschler (1873, Stett. Ent. Zeitschr. 155). A small series of both sexes, taken in August, was present and the specimens are quite typical, the male showing scarcely any traces of the red submarginal lunules on the underside of primaries; the ♀ is heavily shaded with blue on the upper side without or with mere traces of orange lunules above the black submarginal spots of secondaries.

Plebeius aquilo Bdv.

This well-known Arctic form was represented by a few worn specimens.

Heodes dorcas Kby.

A single ♀, captured August 15th, very closely resembles Kirby's figure in the Fauna Boreali-Americana. I am not aware that the species has been recorded from Labrador but the record is not surprising as the species is a distinctly northern one.

Hesperia centaureae Ramb.

AGARISTIDAE.

Androloma mac-cullochi Kby.

Two specimens, taken July 14th and August 23rd.

NOCTUIDAE.

Epipsilia okakensis Pack.

Only a single pair of the species from Hopedale was present which is rather surprising as it is one of the commonest species in the region; a small series occurred in the lot from Nain.

Epipsilia quadrangula Zett.

A good series, illustrating the variability of the species in regard to the depth of maculation and the intensity of the black areas around the reinform and orbicular.

Anomogyna sincera H. S.

A single specimen without date of capture. The species has been recorded from Labrador on the authority of Moeschler, but this is the first authentic specimen which has passed through my hands. It agrees well with the figure in Spuler, Schmett. Europas. Pl. XXXIII, fig. 1.

Anarta richardsoni Curt.

One ♀, captured July 18th, Hopedale; several specimens from Nain.

Polia pulverulenta Sm.

One ♀, captured August 6th. The record is a new one although not surprising as the type specimens were taken at Orono, Me., where so many northern forms have been located. Figures of the species will be found in the Barnes & McDunnough Contributions, Vol. IV, Pl. XVI, figs. 2, 3.

Sympistis melaleuca Thun.

A good series was present: there is considerable variation in the amount of black suffusion on the primaries.

Trichoplexia exornata Moesch.

One ♀, captured August 5th.

Eremobia maillardi exulis Lef.

Two ♂'s and one ♀ of this variable species were included in the Hopedale lot; they all belong to the form without white streaks on the veins. One specimen from Nain was also present.

Hyppa xylinoides Gn.

One ♂, taken July 18th, seems best referred to this species although the color is rather darker and the white patch above the anal angle reduced to a narrow line. More material will be necessary to determine whether we are dealing with a racial form or not.

Autographa arctica Moesch.

Of late years a few stray specimens of this species have passed througn my hands; the present collection contains a long series, however, which conclusively shows that *arctica* from Labrador and *vaccinii* Hy. Edw. from Mt. Washington, N. H., are specifically identical. Both show the same finely waved t.p. line and vary similarly in the amount of black suffusion on the central portion of primaries.

Arctica was originally treated as a Labrador race of *u-aureum* Gn., described with type locality, Dalecarlia. Aurivillius, in his paper on the Insects of Greenland (1890, Bihang K. Sv. Vet. Akad. Handl. XV. Afd. IV, p. 16), makes it a pure synonym of *u-aureum* along with *groenlandica* Staud. and figures the species on Pl. 1, fig. 7. This figure corresponds remarkably closely to our Labrador specimens. Hampson (1913, Cat. Lep. Phal. Brit. Mus. XIII, 424, 432) separates *u-aureum* Gn. and *groenlandica* Staud., making *vaccinii* Hy. Edw. a synonym of the former and figuring the species (Pl. 236, fig. 16) from a North American specimen. Under *groenlandica* he cites *arctica* Moesch. and *u-aureum* Auriv. (nec Gn.). His figure of *groenlandica* (Pl. 236, fig. 23), drawn from an Iceland specimen, certainly appears to represent a species distinct from his other figure but does not agree with Aurivillius' figure above mentioned either in the shape of the gamma-mark or the wavy nature of the t.p. line. Further under *u-aureum* he cites no European localities for the

species and is followed in this by Warren in Seitz, Macrolep. Palaearc. Noct. who makes no mention of *u-aureum* as being Palaearctic. It would almost seem as if European lepidopterists had agreed that the locality 'Dalecarlia,' given by Guenée was erroneous and that the name *u-aureum* was based on Greenland or Iceland specimens; I have seen, however, no published notice to this effect.

Ottolengui (1917, Ent. News XXVIII, 29) treats of *vaccinii* and its synonymy but makes no mention of *arctica* Moesch.

The identity of *u-aureum* and *groenlandica* being in doubt I am obliged to leave them out of consideration for the present; if Aurivillius be correct Guenée's name will take priority; in the meantime the species should be known as *arctica* Moesch. with *vaccinii* Hy. Edw. as a subspecies of doubtful value from New Hampshire and possibly adjacent mountain peaks.

Syngrapha diasema borea Auriv.

A single ♀ specimen corresponds excellently well with Aurivillius' description and figure (op. cit. 17, Pl. 1, fig. 8); this race is said to differ from the type form from Northern Europe in the distinctly yellow coloration of the central area of secondaries with moderately broad smoky border. I have always been inclined to associate a form found in the Rocky Mountains of Canada with *borea;* this same form has recently been treated as a new species by Dr. Ottolengui (1919, Jour. N. Y. Ent. Soc. XXVII, 121, Pl. XV, fig. 2) under the name *diversigna.* With a Paratype and a series of five males from Nordegg, Alberta, before me, I have made a careful comparison with the Labrador specimen and fail to find any characters which would warrant specific distinction; the Alberta specimens are slightly smaller and the yellow of secondaries somewhat brighter and if desired the name *diversigna* Ottol. may be retained to designate the Rocky Mountain race; for the Labrador and Arctic race which is certainly easily separated from *diasema* by the color of the secondaries Aurivillius' term *borea* should be used and the synonymy would thus stand.

diasema Bdv. N. Europe.

(a) *borea* Auriv. Greenland, Labrador.

(b) *diversigna* Ottol. Canadian Rocky Mountains.

LYMANTRIIDAE.

Gynaephora rossi Curt.

One pair of this well-known Arctic form.

GEOMETRIDAE.

Acidalia frigidaria Moesch.

A series of this well-known form captured July 12th-20th shows considerable variation in the distinction of the transverse lines which at times become almost lost in the general gray ground-color.

Carsia paludata labradoriata Moesch.

One specimen.

Dysstroma citrata Linn.

A couple of rather worn specimens taken 23rd August. These were of the dull gray form with slight ruddy subterminal suffusion and with median band rather paler than the remainder of the wing, due to less heavy sprinkling of gray scales. This appears to be the usual form in northern localities.

Xanthorhoe designata Hufn. . .

A small series, rather worn, captured between July 25th and August 6th.

Xanthorhoe algidata Moesch.

The identity of this species has always been doubtful; the general conception, following a specimen in the British Museum, is that it is a species closely allied to *fossoria* Tayl. A single ♂ before me fits these requirements although not agreeing very closely with the original description as regards the details of the median band. For the present I identify it tentatively as *algidata*. The genitalia seem distinct from those of the other members of the group as far as I can judge from Swett's paper (1918, Can. Ent. L, 17) with little or no material before me for comparison. The costa is narrow apically and bears a bunch of long spines directed inward.

Xanthorhoe ferrugata Clerck.

A number of specimens captured in July and considerably the worse for wear.

Euphyia luctuata obductata Moesch.

Apparently one of the commonest geometers of this region; some specimens show traces of a narrow pale band on secondaries.

Eulype hastata Linn.

One specimen, taken August 5th, of the typical form.

Dasyuris polata Dup.

Two ♀'s, captured August 21st and 22nd.

Eupithecia sp.

Several specimens too worn for identification.

Macaria granitata sexmaculata Pack.

Four specimens which presumably may be referred to this race.

Aspilates orciferaria labradoriata Moesch.

A good series, the ♀'s showing a decided yellowish tinge to the primaries

PYRALIDAE.

Nomophila noctuella Schiff.

Two specimens taken early in August.

Scoparia centuriella Schiff.

A number of small, rather dark specimens.

Laodamia fusca Haw.

One male.

Platyptilia carduidactyla Riley.

Two specimens of this species, kindly identified for me by Dr. A. Lindsey; the species has to my knowledge not been previously recorded from Labrador.

GELECHIIDAE.

Gelechia continuella Zell.

One specimen. This European species has been twice described from North America under the names *trimaculella* Pack. and *albamaculella* Cham. Mr. A. Busck informs me that he has recently made slides of the ♂ genitalia of specimens from both continents and they prove to be identical, establishing the above synonymy.

TORTRICIDAE.

Olethreutes intermistana Clem.

Three specimens; kindly identified by Mr. A. Busck of the U. S. National Museum.

Tortrix moeschleriana Wocke.

Two specimens.

Cnephasia osseana Scop.

Three specimens; identified by Mr. A. Busck.

TINEIDAE.

Monopis biflavimaculella Clem.

Four specimens.

CRAGIN'S COLLECTION OF KANSAS MYRIAPODA.

BY HORACE GUNTHORP,
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The first Myriapod record for the State of Kansas is that of Wood (8, pg. 11)[1], who reported the single form *Scolopendra polymorpha* from Fort Riley, Kansas, in 1861. This constituted the sole record for the state until 1885, when Meinert (7, pg. 196) reported *Scolopendra heros* from Riley, Kans. As he considered *S. polymorpha* a synonym of *S. heros*, forms now known to be distinct, he was undoubtedly dealing with the former, as there is no authentic record of *S. heros* occurring as far north in Kansas as Fort Riley, so he cannot be said to have added a new name to the state list. The same year W. F. Cragin (5) published a short list of Kansas Myriapoda in which he enumerated twelve forms covering some nine species in seven genera. In 1893, Bollman (2, pg. 183) placed *Parajulus venustus* on the Kansas list.

No new forms were added until 1913, when the present writer published a more extended catalogue, covering more extensive collecting over the state. This latest list included a total of fourteen species of Diplopoda and fifteen of Chilopoda.

At the time of publishing this last mentioned paper, an effort was made to examine the collection evidently made by Professor Cragin, with the result therein recorded (6, pg. 168) which was as follows: "Through the kindness of Prof. C. H. Edmundson, of Washburn College, I have examined two individuals of this species (*Scolopendra heros*) collected by Cragin in Barber County. The larger one measures 140 m. These two specimens are all that remain of Prof. Cragin's Myiapoda collection, as the remainder were destroyed by fire." This fire occurred in 1908.

During the past year, while the writer was rearranging the specimens in the museum at Washburn College, a perforated board holding some fifty bottles of specimens came to light, some of which, upon examination, proved to be part of the Myriapoda collected by Cragin. This led to a systematic search of the laboratories and store rooms, with the result that a total of twenty bottles plus one dried, pinned specimen were found. With the exception of the latter, there is little doubt but that they are all from one original collection, in

[1]Numbers in parenthesis refer to bibliography at end.

spite of the fact that some of them unfortunately have no labels. This gave the writer a chance to check Cragin's published list with probably most of the material originally used by him, and revise the list of Kansas Myriapoda, with the results recorded below. The collections will be deposited in the Musueum of the University of Kansas.

DIPLOPODA.

Fontaria virginiensis (Drury).

Cragin reports "Two specimens from Kansas Valley Woods, Shawnee Co." There are two bottles of this species in the collection. One contains two specimens, and is labeled *"Polydesmus virginiensis* (Drury), Topeka, Cragin." The other contains one specimen from "Baxter Springs, Ks., Dr. J. M. Duncan." As Topeka is in Shawnee County, it is evident the first bottle contains the specimens referred to by Cragin.

Leptodesmus placidus (Wood).

Cragin records, under the name *Polydesmus floridus,* three specimens from near Thompsonville, Jefferson Co. None in the collection.

Polydesmus pinetorum Bollman.

Cragin does not record this form, but there are five male specimens in the collection labelled "Topeka, Cragin."

Polydesmus serratus Say.

Cragin does not mention this, but there are three specimens, without labels in the collection.

Lysiopetalum lactarium (Say).

Cragin does not record this, but there is one specimen in the collection labelled "Topeka, Cragin."

Arctobolus marginatus (Say).

Not recorded by Cragin, but there are nine specimens in the collection, all wthout labels except one, which is from "Topeka, Ks., L. A. Whitney." Seven of these are without heads!

Tylobolus uncigerus (Wood).

Cragin reports this species under the name *Spirobolus uncigeris* from Shawnee County. As the writer has previously stated (6, pg. 164), other recorded localities for this species are restricted to California and Oregon. It is not to be found in the collection, which fact, taken together with its known distribution, leads to but one conclusion, i.e., it should be stricken from the list of forms in the state. From the mutilated condition of the above mentioned specimens of *A. marginatus* it is quite possible that their identification caused trouble and they were recorded as *uncigerus.*

Parajulus venustus (Wood).

Cragin says, "Specimens of *Iulus* are abundant in Shawnee Co., but I shall not be able to report upon any of them in the present contribution." (5, pg. 145). One specimen in the collection, labeled *"Julus venustus,* Topeka Cragin" appears to be this species.

CHILOPODA.

Scutigera forceps (Raf).

Recorded from Shawnee, Labette, and Barber Counties by Cragin. Seven specimens in collection, one from "Under old beam, Washburn Col., Topeka, May 9, 1884," and another from "Newton (Harvey Co.) Kans."

Lithobius forficatus (L.)

Not recorded by Cragin. One specimen, dried, in case with insects, labeled "Topeka." Probably not one of Cragin's collection.

Lithobius transmarinus (Koch).

Cragin reports this form from Barber Co. under the name *Neolithobius mordax*. One specimen in collection, in bottle containing no label.

Otocryptops sexspinosus (Say).

Not recorded by Cragin, although the present writer so stated in his report (6, pg. 167). Three specimens in collection, without label.

Scolopendra heros Girard.

Cragin reports this form under three varieties, *S. heros, S. heros,* var. *castaneiceps* Wood, and *S. heros,* var. nov. *prismatica,* the distinguishing characters of the latter being "The superior surface of each scutum, except the first and last, may be said to be bounded by three planes, one horizontal and two sloping from either of the same and making with it a clearly-cut angle, giving the appearance of a double bevel. The general color of the specimen in alcohol is deep purplish-black, in sharp contrast with the bright orange-brown of the head and first body segment; feet greenish-yellow, the last pair concolorous with the body, and a little stouter than in the typical species." (5, pg. 144). All of above forms he records from Barber Co. only.

There are five specimens of this species in the collection, all labeled "Barber Co., Cragin." One of these may be the type of Cragin's variety *prismatica,* as the back distinctly shows the three planes as described above, but the color has all faded to a yellowish-orange, and there is no special label to distinguish it from the other specimens. The head is distinctly that of *S. heros,* and so are the prosternal teeth. The pseudopleural processes bear five and seven spines. The prefemur of the anal legs bears eight and seven spines on the ventral surface, and five and six respectively on the inner surface. This variation in number of spines is probably due to the fact that one anal leg is smaller than the other, due to regeneration. The apical processes bear five and nine spines. While these numbers are slightly below the average, they can hardly be said to form grounds for the formation of a new variety, and the peculiarity of the back seems to be only a slight exaggeration of a condition found in other specimens of this species.

Scolopendra morsitans L.

Reported by Cragin from Barber Co. under the variety name *coerulescens.* His description follows: "A centipede with antennae 20-jointed, I refer here provisionally, though it differs in some respects from the characters given by Newport and Wood for this species, and though the latter author has expressed his belief that *S. morsitans* is not an inhabitant of the United States. The color is a uniform light blue, or greenish blue, pale, almost to translucent, the legs being nearly colorless and transparent. The mandibles are dark green,

in sharp contrast with the light-bluish hue of the mouth-parts, which are concolorous with the head and body. The entire animal is of a more delicate structure than is usually seen even in small specimens of the genus. The reflexed antennae cover about four segments of the body. The length is a little over an inch. These characters will suffice to distinguish this variety of *morsitans*, if I am right in referring it to that species; but I shall elsewhere give the details of its form and armature.

"Newport states that the range of *S. morsitans* includes the tropical and subtropical portions of the New World, and an unknown portion of China. In view of the many subtropical features in the fauna of Southern Kansas that have already come to light, the discovery of this species in that region need be hardly a matter of surprise. Our specimen was found under a stone on the summit of a high hill in Barber Co., about 500 feet above the Medicine River at Medicine Lodge."

Bollman (1, pg. 174) lists this variety as a synonym of *S. morsitans*, but states that it may not be such, as Cragin's "description is so indefinite that it is almost impossible to tell to what species it may belong." This record for the species has evidently been accepted by Chamberlin (3, pg. 479), as he says, "In the United States known from Georgia, Florida, Kansas, Utah, and California." It is probably best to let it stand until more extensive collecting in the southwestern part of the state has cleared the matter up. There is no specimen referable to this species in the collection, nor one which corresponds to Cragin's description.

Scolopendra polymorpha Wood.

Recorded from Rice, Finney and Barber Cos. by Cragin. There are three specimens in the collection, but with no labels.

A corrected list of the known Myriapoda occurring in Kansas at this writing would be as follows:—

DIPLOPODA.

Fontaria virginiensis (Drury); *Leptodesmus hispidipes* (Wood); *Leptodesmus placidus* (Wood); *Oxidus gracilis* (C. L. Koch); *Polydesmus pinetorum* Bollman; *Polydesmus serratus* Say; *Scytonotus granulatus* (Say); *Cleidogona* sp.; *Lysiapotalum lactarium* (Say); *Arctobolus marginatus* (Say); *Parajulus diversifrons* (Wood); *Parajulus impressus* (Say); *Parajulus venustus* (Wood).

CHILOPODA.

Scutigera forceps (Rafinesque); *Lithobius forficatus* (Linnaeus); *Lithobius transmarinus*. Koch; *Nadabius jowensis* (Meinert); *Tidabius kansensis* (Gunthorp)[2]; *Pokabius bilabiatus* (Wood)[3]; *Otocryptops sexspinosus* (Say); *Scolopendra heros* Girard; *Scolopendra morsitans* Linnaeus; *Scolopendra polymorpha* Wood; *Arenophilus bipuncticeps* (Wood); *Arenophilus osborni* Gunthorp; *Geophilus dolichocephalus* Gunthorp; *Geophilus mordax* Meinert; *Linotaenia fulva* (Say).

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[2]*Lithobius kansensis* Gunthorp. (6, pg. 166). This species should be placed in the genus *Tidabius* recently created by Chamberlin (4, pg. 80).

[3]*Lithobius bilabiatus* Wood. Proc. Phil. Acad., 1867, p. 130.
Poabius bilabiatus Chamberlin. Ann. Entom. Soc. Amer., 5: 153, 1912.
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NOTES ON COCCIDAE VIII, (HEMIPTERA).

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A REVIEW OF MACGILLIVRAY'S "THE COCCIDAE."

(Continued from page 61).

The establishment of a separate subfamily for the peculiar genus *Apiomorpha* is perhaps justified, but I cannot agree with MacGillivray in assigning to the Apiomorphinae such forms as *Ascelis and Opisthoscelis*. The latter I suspect to be related to *Capulinia,* which MacGillivray refers to the Cylindrococcinae. As to the first named I have specimens but no opinions concerning them except that I cannot connect them with any of the other Coccidae.

The subfamily Cylindrococcinae is simply a heterogeneous assemblage of doubtful forms. I am unable to see any special connection between such genera as *Halimococcus, Phoenicococcus, Capulinia* and *Cylindrococcus,* of all of which I have specimens. But I must confess to a total lack of knowledge as to what should be done with them. MacGillivray has retained Brittin's genus *Scutare* in the Conchaspinae, yet Green, who has examined specimens, states that it does not belong in the group and refers the single included species to *Rhizococcus*. Judging from Brittin's figures and description I am inclined to agree with Green that it does not belong in the Conchaspinae. However, I believe the genus to be valid, although I cannot say where it belongs. Following Newstead MacGillivray records the presence of abdominal spiracles in this subfamily. Judging from preparations that are of the best I cannot agree that the structures in question are spiracles. There is no visible opening and the appearance is the same as that of the pair of ventral tubercles that appears for instance in *Kuwanina*.

The subfamily Disapidinae has been the special recipient of MacGillivray's attention and occupies 249 of the 465 pages of text in the book. Throughout this subfamily the storm of genus making has raged, reaching its climax in the Aspidiotini, and of the old genera there remain nothing but fragments. I count 116 new genera in the sub-family. To attempt to analyze these genera in anything short of another book is impossible and I shall content myself here with discussing only a few of the most remarkable results and some of the most obvious errors. Yet the commission of such errors as some of these are is sufficient to cast doubt upon the value of MacGillivray's conclusions in general. It is conclusive evidence that he has not attained to that knowledge and understanding of the group that should have preceded any such wholesale rearrangement as he has undertaken.

In the general discussion of this subfamily I note two errors that may be of some importance. On page 218 it is stated that in the first stage nymphs the distal segment of the antennae "is long and constricted and appears as if composed of several segments." This is true of only a part of the group, for in some species the distal segment is short and not at all annulated. On page 220 it is said that when the insects of the second stage molt "there is no variation in the way in which the cuticle ruptures." However, in some forms such as certain species of the genus *Odonaspis* (as previously understood), the ventral skin separates entirely from the dorsal and is incorporated in the ventral scale.

I am not entirely in accord with MacGillivray's arrangement of the tribes in this subfamily, although this is not original with him. I consider that the various groups of species in which the adult remains enclosed within the second exuvia are, with certain exceptions, derivatives of forms that are included in the various other tribes and that separate tribes for such groups as the Leucaspidini and Fioriniini tend merely to obscure their real relationships. Furthermore I consider the distinction between the tribes Lepidosaphini and Disapidini to be entirely artificial. The genus *Ancepaspis*, which MacGillivray attaches to the Aspidiotini I consider to represent an independent group.

In many cases throughout the subfamily MacGillivray has separated genera on the basis of the presence or absence of the paragenital pores, the "genacerores." That the consistent following of this practice results in artificial groups seems to me evident as for instance in the case of the genera *Lineaspis* and *Cupidaspis*, the types of which are scarcely separable specifically except for this difference. Such splitting as this may be convenient but it does not express the relationships of the forms involved.

The peculiar combinations obtained by MacGillivray's methods begin to appear in the tribe Parlatoriini where *Parlatoria chinensis* Marlatt and *P. pyri* Marlatt are referred to the genus *Cryptoparlatoria* with *C. leucaspis* Lindinger as type. If specimens before me as *C. leucaspis* be correctly determined such an arrangement is quite untenable.

In the Leucaspidini two such utterly different species as *L. indica* Marlatt and *L. kelloggi* Coleman are placed together in *Suturaspis*. The latter species, in fact, does not even belong in this group for the adult female is not enclosed within the exuvia of the preceding stage. Under the Lepidosaphini I have scarcely a large enough representation of the species to permit comments. I may note, however, that the genus *Aonidomytilus* is retained as separate on the basis of the supposed absence of plates cephalad of the anal lobes—although these plates are present as I have shown in another paper. Also *Lepidosaphes mexicana* (Ckll.) which MacGillivray places in *Triaspidis*, really runs to *Leonardaspis* if it runs any place.

In the tribe Diaspidini the genus *Diaspis* is separated from *Cockerellaspis* and *Epidiaspis* by reason of its having the "Pygidium with caudal margin deeply concave on meson with median pair of lobes in concavity. .," yet *Diaspis calyptroides* Costa, the type of the genus, has not the slightest trace of such a character and *D. phoradendri* Ckll., which MacGillivray retains in *Diaspis* has the median lobes extremely prominent. *Diaspis toumeyi* Ckll., which is referred to *Pseudaulacaspis* is a species of the same type as *D. texensis* Ckll. and *D manzanitae* (Whitney) which are retained in *Diaspis*.

I am entirely unable to concur in the separation of *Essigaspis*, with *Protodiaspis agrifoliae* Essig as type, and *Obluctaspis*, with *P. lobata* Ferris as type, from *Protodiaspis*. On the other hand MacGillivray has retained in *Protodiaspis* the species *P. pulchra* Ferris which might well have been taken out. Furthermore he has left in this genus, where they certainly do not belong the two species *edentata* Ferris and *anomala* Green, while the genus *Ancepaspis* to which they do belong, has been transferred to the Aspidiotini! I consider that *Ancepaspis* really represents a distinct group.

The two genera *Aulacaspis* and *Phenacaspis* are apparently closely related, at least in part, for some of the species referred to the latter genus, such as *P. mischocarpi* Ckll. and Rob., appear really to belong to the former. This fact appears entirely to have escaped MacGillivray's notice. It has long been apparent that the genus *Chionaspis* was in need of limitation. The process was begun by Cooley and has been contained by MacGillivray with none too fortunate results. Such peculiar forms as *C. etrusca* Leonardi and *C. spartinae* Comst. are retained in *Chionaspis* when they might well have been removed, while such a form as *C. caryae* Cooley which is really rather close to typical *Chionaspis* is taken out.

I believe that it has already been pointed out that *Hemichionaspis* is a synonym of *Pinnaspis*. Certainly if specimens in my hands determined by Cockerell as *P. buxi* be correctly named there is no doubt that it is. Yet MacGillivray places *Pinnaspis* in the Lepidosaphini and *Hemichionaspis* in the Diaspidini.

Chionaspis striata Newstead is made the type of the genus *Lineaspis* and *Leucaspis cupressi* Coleman the type of *Cupidaspis*, yet the two species differ only in the fact that the former possesses "genacerores" while the latter does not. I regard them as congeneric and for them the name *Lineaspis* will stand.

A new genus, *Situlaspis,* has been named for *Pseudodiaspis condaliae* Ferris, yet this species is no farther from the type of *Pseudodiaspis* than are the others that are retained in that genus.

In the tribe Aspidiotini there are before me specimens of *Furcaspis biformis* (Ckll.) which show that MacGillivray's conception of this genus is entirely distorted. He has excluded from this genus two species, *haematochroa* Ckll. and *oceanica* Lindinger, which seem really to belong to it and has referred them to the genus *Spinaspidiotus* together with such a species as *Aspidiotus pangoensis* Doane and Ferris with which I can not believe that they have anything at all to do. Conversely he has referred to *Furcaspis* such species as *Aspidiotus jordani* Kuwana and *A. juglans-regiae* Comst.—a truly remarkable combination.

He has, I say, placed *Aspidiotus juglans-regiae* in *Furcaspis,* while under *Quadraspidiotus* appear *A. glanduliferus* Ckll. and *A. fernaldi* Ckll, the former of which is certainly and the latter almost certainly a synonym of *juglans-regiae.*

The former *Targionia helianthi* (Parrott) appears as the type of *Rhizaspidiotus, T. gutierreziae* (Ckll.) as the type of *Chorizaspidiotus,* and *T. chenopodii* Marlatt as the type of *Remotaspidiotus*—yet the three are scarcely separable specifically.

Under *Neosignoretia* appears *Aspidiotus yuccae* Ckll., which I have elsewhere referred to *Pseudodiaspis* and which is a Diaspidine form, and associated with it is *Aspidiotus yulupae* Bremner which I regard as a synonym of *A. osborni* Ckll. and Newell, the latter being placed under *Diaspidiotus.*

Targionia yuccarum (Ckll.) is made the type of a new genus, *Targaspidiotus.* I reaffirm my former opinion that it is a true *Targionia.* The species described by Marlatt as *Aonidia juniperi* (and which I believe to be a true *Aonidida*) is referred to *Targionia,* while *Aspidiotus shastae* Coleman, of which *juniperi* is a synonym, is referred to *Gonaspidiotus* in company with such strange companions as *Aspidiotus graminellus* Ckll.

Xerophilaspis, referred by MacGillivray to the Aspidiotini, in my opinion belongs in the Diaspidini.

Under *Comstockiella* appears *Aspidiotus riverae* Ckll. which belongs somewhere in the Diaspidini.

Aspidiotus anonae Houser (which is a synonym of *A. herculeanus* Doane and Hadden) is made the type of the genus *Clavaspis,* while *A. subsimilis* Ckll. of which *anonae* was formerly regarded as a variety is referred to *Hendaspidiotus.* While I can not consider that *herculeanus* is a "variety" of *subsimilis* the two are certainly so closely related that to place them in separate genera seems inexcusable. *Aspidiotus coursetiae* Marlatt, which is another species of the same group, is placed in *Diaspidiotus,* while *Aspidiotus covilleae* Ferris, which is very close to if not identical with *coursetiae,* is placed as the type of a new genus, *Ferrisaspis.* I must regretfully reject the honor thus done me.

I repeat that the instances which I have cited above are simply a few of the examples to be found in the treatment of the Diaspinae. An extended analysis will show many others equally worthy of criticism. I can not believe that such work as this can do anything more than extend the confusion already existing in the group.

THE ACADIAN ENTOMOLOGICAL SOCIETY.

It will be of interest to many of the readers of the "Canadian Entomologist" to learn that at the last meeting of the Entomological Society of Nova Scotia, held recently in Halifax, it was decided to broaden out this Society into a Maritime one to include the three provinces, Nova Scotia, New Brunswick and Prince Edward Island.

The name of the Society was also changed from the Entomological Society of Nova Scotia to the Acadian Entomological Society, this name being chosen on account of the fact that the territory embraced by the new Society includes practically the same area as did the ancient Acadia.

The Entomological Society of Nova Scotia has been steadily increasing in numbers and influence since its organization in 1915, and it is felt that this change is another decided step in advance.

NOTE ON THE ROSY APHIS.

BY A. C. BAKER,
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In 1916 W. F. Turner and the writer published some results of a study of the rosy apple aphis. We found that the insect was quite distinct from *A. sorbi* Kalt. of Europe, and, following the lead of Mr. Pergande, we used *malifoliae* Fitch for the species. At the time we had access to only a few of Mr. Pergande's notes and were unaware that he had made studies on *sorbi* in Germany. These studies convinced him that *sorbi* and the rosy aphis are distinct. Theobald reached the same conclusion in England and Gillette from Russian material was equally convinced. All who studied actual material agree, therefore, that two forms are concerned.

At the time we wrote our paper the Fitch type of *malifoliae* was thought to be lost but this has since been located in a group of slides presented to the National Museum by Miss Pergande. This material still bears the original Fitch note book numbers. The species, however, is *crataegifoliae* Fitch, the type of which is also in the National Museum collection. The rosy aphis, therefore, is again without a name, as the former names given it all refer to different insects. We herewith give the species the name ANURAPHIS ROSEUS. A full discussion of the synonymy will be given in a paper on the genus *Anuraphis* which will soon be ready for the press.

OBSERVATIONS ON JOHNSONOMYIA FELT WITH A DESCRIPTION OF A NEW SPECIES.

BY E. P. FELT.
Albany, N. Y.

The genus *Johnsonomyia* Felt was erected in 1908 for the reception of a peculiar species collected in Vermont by that ardent and discriminating Dipterist, Mr. C. W. Johnson of the Boston Society of Natural History. A related species was found to occur rather commonly in the vicinity of Albany, a unique representative from Guatemala was described in 1912 and a closely allied species from Brazil in 1915. The types of these, *J. cincta* Felt and *J. braziliensis* Felt, are deposited in the U. S. National Museum and the Cornell University collections respectively. There has just come to hand a most remarkable form from Africa and this in connection with the probable close relationship of the Australian *Chastomera* Skuse indicates a presumably world wide distribution for this peculiar genus, which latter is probably characterized by the possession of 16 antennal segments and has the wing venation of a Porricondylid, though the distinctly heavier veins, the simple fifth vein and the marked hairiness of the wing membrane suggests something unusual, which in connection with the absence of circumfila, has led to the placing of the genus in the Heteropezinae.

Johnsonomyia alexanderi n. sp.

The giant midge characterizing herewith was recently received through the kindness of Dr. C. P. Alexander of the Illinois State Natural History Survey. It was labelled Efulan, Cameroun, V-6-1920, J. A. Reis, Coll. A perusal of the following description shows this giant midge to be a strikingly marked form entirely different from anything heretofore brought to notice.

Female. Length 8 mm. Antennae extending to the fourth abdominal segment, rather thickly haired, mostly light brown, the stems whitish transparent, and probably 16 segments, the first and second segments short, stout, dark brown, the fifth with a stem nearly equal to the length of the basal enlargement, which latter has a length about 2½ times its diameter and is irregularly clothed with setae, there being sub-basally and sub-apically a few very long, dark setae, the interspaces rather thickly filled with shorter, light setae; Palpi presumably quadriarticulate, indistinct in the mount; mesonotum a dull reddish brown; scutellum and postscutellum concolorous; the abdomen sparsely haired, dark brown; the ovipositor dark reddish orange; wings sub-hyaline, the membrane rather thickly clothed with fuscous hairs, sub-costa uniting with the anterior margin at the distal third, the third vein joining the margin well beyond the apex of the wing and united to sub-costa near the basal half by a distinct cross vein, the fifth simple and joining the posterior margin a little before the basal half; halteres dark brown; coxae and legs dark brown except the basal half of tibiae and the distal four tarsal segments, which latter are snow white and suggest the ornamentation of Bittacomorpha clavipes Fabr; claws moderately long, stout, black, apparently simple; the pulvilli rudimentary; ovipositor short, the lobes narrowly oval, with a length about three times the width and thickly setose.

Type A. 3196, N. Y. State Museum.

Mailed June 8th, 1921.